

CLAIMS

1. A method of making a painting mask (13, 45 to 47, 301) for masking a portion of a vehicle, the method being characterized by the following steps:

- 5 a) presenting a sheet material (6) over a sheet material support (2, 3, 202, 210);
 b) holding the sheet material in contact with a face (19, 26) of the sheet material support;
 c) cutting a mask out in the sheet material held in
10 contact with the sheet material support by using a cutter tool (7, 8) that is moved relative to the support and/or the material; and
 d) separating the mask from the sheet material and/or the support.

15 2. A method according to claim 1, in which the mask is cut out in interrupted manner so as to form connecting portions (300) between the periphery of the mask and the sheet material surrounding the mask.

20 3. A method according to claim 1 or claim 2, in which the cutter tool is moved relative to the support at a displacement speed lying in the range 0.01 m/s to 1.00 m/s, and preferably in a range of 0.05 m/s to
25 0.50 m/s.

 4. A method according to any one of claims 1 to 3, in which a sheet material (6) is used presenting weight per unit area of less than 200 g/m².

30 5. A method according to any one of claims 1 to 4, in which a display device used to display (104) a collection of masks adapted to a given vehicle, in which one or more masks is/are selected from the collection of masks, in
35 which a configuration for relative positioning of the selected masks is determined (108) so as to achieve an

amount of scrap that is small, and in which the masks are caused to be cut out (109) in this configuration.

- 5 6. A method according to claim 5, in which one vehicle is selected from a collection of vehicles, and in which data corresponding to a collection of masks adapted to the selected vehicle is read from a geometrical database of masks and/or vehicle glazed portions, and said data is used to display said collection of masks.
- 10 7. A method according to any one of claims 1 to 6, in which the sheet material is moved relative to the support while cutting out a mask.
- 15 8. A method according to any one of claims 1 to 7, in which the sheet material is moved relative to the support at a speed that is slower than the speed of the cutter tool.
- 20 9. A method according to any one of claims 1 to 8, in which the blade is moved relative to the sheet material along at least four axes or directions.
- 25 10. A method according to any one of claims 1 to 9, in which a blade is used that is free to pivot about an axis (200) substantially perpendicular to the support and/or the sheet material.
- 30 11. A method according to any one of claims 2 to 10, in which the ratio of the length of a connecting portion (300) to the length of mask outline (302) between two adjacent connecting portions lies in a range 3×10^{-3} to 3×10^{-1} , and preferably in a range 5×10^{-3} to 2×10^{-2} .
- 35 12. A method according to any one of claims 1 to 11, in which at least one physicochemical property of the sheet material and/or its packaging is detected or measured,

after which it is verified whether the detected or measured property corresponds to a predetermined property, and if so, operations b) to d) are performed.

- 5 13. A method according to any one of claims 1 to 12, in which the sheet material is held in contact with the support by pneumatic suction.
- 10 14. A method according to any one of claims 1 to 13, in which the sheet material is held in contact with the support by applying pressure.
- 15 15. A method according to any one of claims 1 to 14, in which the sheet material is moved relative to the support under drive from presser rollers.
- 20 16. A method according to any one of claims 1 to 15, in which the sheet material packaged in the form of a roll is unrolled so as to be presented over a downwardly-curving table (3).
- 25 17. A method according to any one of claims 1 to 16, in which a single thickness of sheet material is cut out at a time by means of a blade (8), the blade being moved along at least two or three axes or directions relative to the support.
- 30 18. A method according to any one of claims 1 to 17, in which the length of time required for cutting out a mask lies in a range of 1 s to 120 s.
- 35 19. A method according to any one of claims 1 to 18, in which a mask is cut out in such a manner that its outline (44) is set back (43) from the outline (48) of the portion of the vehicle that is to be protected, with the value of the setback (43) being adjusted, if appropriate.

20. A method according to any one of claims 1 to 19, in which one or more slits (55) are cut from the edge (44) of the mask.
- 5 21. A method according to any one of claims 1 to 20, in which at least one item identifying the vehicle and/or the operator concerned is marked and/or printed on the mask.
- 10 22. A painting mask for masking a glazed portion of a vehicle as obtained by a method according to any one of claims 1 to 21.
- 15 23. A mask according to claim 22, presenting a slitted outline.
24. A mask according to claim 22 or claim 23, presenting a weight per unit area lying in a range 50 g/m² to 80 g/m².
- 20 25. A mask according to any one of claims 22 to 24, having one or more slits (55) extending from its edge (44) towards its central portion.
- 25 26. A mask according to any one of claims 22 to 25, in which the outline is curvilinear at least in part and which is made from a sheet of material that is thin, lightweight, translucent or transparent, and provided on both faces with good resistance to penetration by a
- 30 water- or oil-based substance, such as grease-proof paper or a plastics material presenting suitable electrostatic properties.
27. Apparatus (1) for making a painting mask (13, 45 to 47, 301) for masking a portion of a vehicle out of a sheet material (6), the apparatus comprising:
- 35 a sheet material support (2, 3, 202, 210);

holder means (18, 20, 21, 22, 206, 207) for temporarily holding the sheet material in contact with the support; and

5 cutter means (7, 8) for cutting out a mask from the material held against a face of the support, the cutter means being associated with displacement means (28, 29) for establishing relative displacement between a cutter tool (8) and the support and/or the sheet material.

10 28. Apparatus according to claim 27, including means for causing a mask to be cut out discontinuously along its outline.

15 29. Apparatus according to claim 27 or 28, including a downwardly-curved table (202, 215) and a roller (210) for supporting the sheet material, the table being pierced by orifices (204, 205) in the form of slots extending on either side of the roller (210).

20 30. Apparatus according to any one of claims 27 to 29, including means (22) for establishing suction in a cavity (216) in communication with the orifices (204, 205), and means (206, 207) for applying pressure and driving the sheet material by friction, preferably by friction
25 against the support roller (210).

31. Apparatus according to any one of claims 27 to 30, including means for detecting and/or measuring a physicochemical property of the sheet material and/or of
30 its packaging, comparator means connected to the detection and/or measurement means to compare the detected or measured property with a predetermined property, and validation means connected to the comparator means so that when the detected or measured
35 property corresponds to the determined property, actuation of at least a portion of the apparatus is

authorized, in particular actuation of the holder means and/or the cutter means is authorized.

5 32. Apparatus according to any one of claims 27 to 31, and including:

an electronic unit (32) connected to actuators for displacing the cutter tool (7, 8); and

10 a program for controlling the cutter tool and its displacement as a function of two-dimensional or three-dimensional geometrical data concerning masks or glazed portions that are recorded in a database (40, 42) connected to the unit (32).

15 33. Apparatus according to any one of claims 27 to 32, including means for adjusting a setback (43) between the edge (44) of a mask and the edge (48) of a portion to be masked.

20 34. Apparatus according to any one of claims 27 to 33, and including:

an electronic unit (32) connected to actuators for displacing the cutter tool (7, 8);

25 an optical sensor (99) connected to the electronic unit to deliver signals thereto on detection or measurement of an optical characteristic of the paper;

a memory having a reference value recorded therein and associated with the electronic unit; and

program means for comparing the signals delivered by the sensor (99) with the reference value.

30 35. Apparatus according to any one of claims 27 to 34, and including a collector or container for recovering masks that have been (pre)cut and/or sheet material scrap.

35 35. Apparatus according to any one of claims 27 to 34, further comprising:

- means for inputting data to identify a zone of a vehicle, such as a zone that has been impacted during an accident involving the vehicle;

5 • selector means for automatically selecting one or more glazed portions of the vehicle that need to be masked, as a function of the identification data; and

- control means for controlling the cutter means to make one or more masks adapted to the selected glazed portion(s).